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Attorney Docket # 4925-172PUS Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Peeter PRUUDEN et al.
Serial No.: 10/009,215
Filed: April 3, 2002
For: Routing in a Network

Examiner: Zewdu, Meless Nmn
Group Art: 2683

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APPEAL BRIEF

SIR:

This is an appeal, pursuant to 37 C.F.R. § 41.37 from the decision of the Examiner in the above-identified application, as set forth in the Final Office Action wherein the Examiner finally rejected appellant's claims. The rejected claims are reproduced in the Claims Appendix attached hereto. A Notice of Appeal was filed on May 23, 2005.

The fee of $500.00 for filing an Appeal Brief pursuant to 37 C.F.R. § 41.20 is submitted herewith. Appellants request a one-month Extension of Time of the original shortened statutory response period to file this Appeal Brief. A Petition for the one-month extension of time is enclosed herewith along with the fee of $120.00. Any additional fees or charges in connection with this application may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

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02 FC:1251 120.00 OP

REAL PARTY IN INTEREST

The assignee, Nokia Corporation, of applicants, Peeter Pruuden and Jouni Kallio, is the real party of interest in the above-identified U.S. Patent Application.

RELATED APPEALS AND INTERFERENCES

There are no other appeals and/or interferences related to the above-identified application at the present time.

STATUS OF CLAIMS

Claims 1-47 have been rejected. Claims 1-47 are on appeal.

STATUS OF AMENDMENTS

A Request for Reconsideration was filed on April 20, 2005 subsequent to the Final Office Action. In response, on May 3, 2005 the Examiner states that the Request for Reconsideration will be entered for purposes of appeal.

SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 recites a telecommunication system comprising "a first base station and a second base station, both capable of communicating by radio with a first terminal unit". Fig. 2 of the present application shows base stations 20-23 which are capable of communicating with a mobile station 40 (see page 6, lines 20-21, of the present specification).

Independent claim 1 recites "a telecommunication network capable of coupling the first base station to a second terminal unit over a first route and capable of coupling the second base

station to the second terminal unit over a second route, whereby traffic data may be communicated between the first terminal unit and the second terminal unit via the first base station or the second base station, each of said first route and second route comprising at least one radio link segment and other non-radio link segments". In Fig. 2, the telecommunication network includes base station controllers (BSCs) 24, 25 which control the base stations 20-23 and a network controller 30 which controls the BSCs 24, 25 (see page 6, lines 1-8). Each of the base stations 20-23 is capable of communicating with a second terminal, i.e., terminal 37, by a different route (page 7, lines 1-11). Each of the different routes includes at least one radio link 41-44 (page 6, lines 20-21; page 7, lines 16-17) and other non-radio links 26-29, 32, 33 (see Fig. 2 and page 7, lines 18-19).

Independent claim 1 further recites "a routing unit for determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include quality of at least part of the first and second routes, wherein said at least a part of the first and second routes is at least one of the other non-radio link segments". A handover unit 31 decides when to handover from base station 20 and to which base station the handover is to be (page 7, lines 12-13). The handover decision uses information on the quality of communications (page 7, lines 27-28). Furthermore, the information includes information on the quality of portions of the path other than the air interface, i.e., the quality of the non-radio links (page 8, lines 1-2).

Independent claim 11 recites "a method for determining routing in a telecommunication system comprising a first base station and a second base station, both capable of communicating by radio with a first terminal unit". Fig. 2 of the present application shows base stations 20-23 which are capable of communicating with a mobile station 40 (see page 6, lines 20-21, of the present specification).

The telecommunication system of claim 11 further includes "a telecommunications network capable of coupling the first base station to a second terminal unit over a first route and capable of coupling the second base station to the second terminal unit over a second route, whereby traffic data may be communicated between the first terminal unit and the second terminal unit via the first base station or the second base station, each of the first and second routes comprising at least one radio link segment and other non-radio link segments". In Fig. 2, the telecommunication network includes base station controllers (BSCs) 24, 25 which control the base stations 20-23 and a network controller 30 which controls the BSCs 24, 25 (see page 6, lines 1-8). Each of the base stations 20-23 is capable of communicating with a second terminal, i.e., terminal 37, by a different route (page 7, lines 1-11). Each of the different routes includes at least one radio link 41-44 (page 6, lines 20-21; page 7, lines 16-17) and other non-radio links 26-29, 32, 33 (see Fig. 2 and page 7, lines 18-19).

The method of independent claim 11 includes the step of "estimating the quality of at least part of the first and second routes, wherein the at least a part of the first and second routes is at least one of the other non-radio link segments". The handover decision uses information on the quality of communications (page 7, lines 27-28). Furthermore, the information includes information on the quality of portions of the path other than the air interface, i.e., the quality of the non-radio links (page 8, lines 1-2).

Independent claim 11 further includes the step "determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations independence on factors that include the quality". A handover unit 31 decides when to handover from base station 20 and to which base station the handover is to be (page 7, lines 12-13).

GROUNDS OF REJECTION TO BE REVIEWED IN APPEAL

1. Whether claims 1-5, 12, and 14-17 are patentable under 35 U.S.C. §103 over Applicant's admitted Prior Art (APA) in view of U.S. Patent No. 6,263,207 (Kito) and U.S. Patent No. 6,038,452 (Strawczynski)?

2. Whether claims 6, 11, 19-23, and 36 are patentable under 35 U.S.C. §103 over APA, Kito and Strawczynski and further in view of U.S. Patent No. 5,737,365 (Gilbert)?

3. Whether claims 7-8 and 37-38 are patentable under 35 U.S.C. §103 over APA, Kito and Strawczynski and further in view of U.S. Patent No. 6,324,170 (McClennon)?

4. Whether claims 9, 13, 18, 24-31 and 39 are patentable under 35 U.S.C. §103 over APA, Kito and Strawczynski and further in view of U.S. Patent No. 6,654,359 (LaPorta)?

5. Whether claims 41, 42, 45, and 46 are patentable under 35 U.S.C. §103 over APA, Kito and Strawczynski and further in view of U.S. Patent No. 6,771,609 (Gudat)?

ARGUMENT

Independent claim 1

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Regarding independent claim 1, it is respectfully submitted that the combined teachings of APA, Kito and Strawczinski fail to disclose, teach or suggest "a routing unit for determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include quality of at least part of the first and second routes, wherein said at least a part of the first and second routes is at least one of the other non-radio link segments", as expressly recited in independent claim 1.

As acknowledged by the Examiner in the final Office Action mailed January 21, 2005 and the Advisory Action mailed May 3, 2005, APA in view of Kito fails to teach or suggest the above limitations. APA discloses a telecommunication network having base stations 4, 5, 6 which communicate with a mobile station 9. The base stations 4, 5, 6 are connected to a base station controller 7 which is connected to a mobile switching center 8 of a communication network. The APA does not disclose a routing unit for determining whether a first terminal is to communicate with the second terminal via the first or second base station dependent on factors including quality of at least part of the first and second routes, as recited in independent claim 1.

Kito discloses a mobile radio communication system which sets a radio circuit efficiently without deteriorating communication quality even when congestion of communication channels occurs (see abstract of Kito). Kito discloses that when a new cell is originated at a base station, the mobile switching center 8 checks the congestion level at the base station (see col. 7, lines 7-10). If congestion is determined in the forward link, then the mobile switching center selects a mobile station connected to the base station with the lowest forward reception level and determines whether that mobile station can communicate with any other base stations (col. 7, lines 20-34). The mobile switching center then selects the base station which the mobile station receives

with the highest forward reception level (col. 7, lines 34-40) and switched the forward link. The same process is similarly performed for the reverse link (col. 9, lines 12-22).

While the congestion level of a base station and the reception level of a base station may have an effect on the quality of service of a communication channel, the congestion level and reception level are not direct measurements of quality. Kito relates to adding a new mobile station in a network and the object is therefore to avoid affecting the quality of service of existing connections. To avoid affecting the quality of service of existing connections, Kito verifies whether the new connection would exceed allowed congestion levels and if so takes the above measures. Since Kito relates to changing a base station based on traffic congestion before the quality of service is effected, Kito fails to teach or suggest monitoring the quality of service level directly. Therefore, Kito fails to teach or suggest "a routing unit for determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include quality of at least part of the first and second routes", as expressly recited in independent claim 1.

Strawczynski fails to teach or suggest what Kito lacks. Strawczynski relates to a communication network and method to enable better control of quality of service of signals in the communication network. To ensure a quality of service, Strawczynski teaches that a control system alters at least one parameter of the network that influences a quality of service (see col. 3, lines 4-10) of Strawczynski). The quality of service to be altered may be the frame error rate or signal-to-noise ratio (col. 3, lines 16-21). The parameter to be controlled to improve the quality of service is the power output of transmitters (col. 3, lines 55-60). Accordingly, Strawczynski discloses changing parameters of a network to improve the quality of service of an established communication link instead of determining a route in dependence on the quality of service.

Since Kito discloses that a route may be chosen based on congestion and Strawczynski discloses that a quality of a route may be adjusted by adjusting network parameters, the combined teaching of Kito and Strawcynski fails to teach or suggest that the route is determined based on quality. Rather, the combined teaching indicates that the quality of a route chosen according to Kito may be adjusted in accordance with the teachings of Strawcynscki. Accordingly, APA and Kito in view of Strawczynski fails to teach or suggest "a routing unit for determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include quality of at least part of the first and second routes", as expressly recited in independent claim 1.

In the Advisory Action mailed May 3, 2005, the Examiner states that col. 5, lines 1-58; col. 8, line53 to col. 9, line 7; and col. 10, lines 40-44 of Strawcynski disclose factors that include the quality of at least parts of routes. The Examiner further states that besides adjusting link parameters Strawcynski teaches link path selection based on quality. However, each of the sections of Strawcynski referred to by the Examiner specifically states that a parameter of an established pathway is adjusted or controlled. Since Strawcynski discloses adjustment of link parameters to change the quality of service of an established pathway, Strawcynski fails to teach or suggest "determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include quality of at least part of the first and second routes", as expressly recited in independent claim 1.

Lastly, independent claim 1 specifically recites "wherein said at least a part of the first and second routes is at least one of the other non-radio link segments". That is, the portion of the route whose quality affects the determination of whether the first terminal unit is to communicate via the first or second base stations is a non-radio link segment. In contrast,

Strawcynski specifically addresses the quality in the wireless portion of the link (see, e.g., col. 4, lines 59-60; col. 5, lines 8-9, 35, and 59-60).

For all of the foregoing reasons, it is respectfully submitted that the combined teachings of APA, Kito, and Strawcynski fail to establish a *prima facie* case of obviousness with regard to the subject matter recited in independent claim independent claim 1. The Final Rejection of independent claim 1 should be reversed.

Independent claim 11

For the reasons discussed above, APA, Kito, and Strawczynski alone and in combination, fail to teach or suggest "determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include the quality", as recited in independent claim 11.

Gilbert fails to teach what APA, Kito and Strawczynski lack. Gilbert discloses a method and apparatus for determining a received signal quality estimate of a trellis code modulated signal. However, the ultimate goal of Gilbert is to use the estimated quality for selection of an encoding scheme best adapted to ongoing RF channel conditions (see col. 10, lines 49-51 of Gilbert). Since Gilbert discloses using the estimated quality for determining an encoding scheme, Gilbert fails to teach or suggest "determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include the quality", as recited in independent claim 11.

As stated in the Advisory Action mailed May 3, 2005 (starting 7 lines from the bottom of page 3 of the Advisory Action), the Examiner uses the Gilbert reference to address the

"estimating" limitation of claim 11. Accordingly, the Examiner acknowledges that Gilbert fails to teach or suggest the above step of determining.

For the foregoing reasons, it is respectfully submitted that the combined teachings of APA, Kito, Strawcynski, and Gilber fail to establish a *prima facie* case of obviousness with regard to the subject matter recited in independent claim independent claim 11. The Final Rejection of independent claim 11 should be reversed.

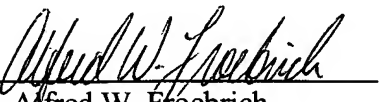
Dependent Claims

Dependent claims 2-10 and 12-47, each being dependent on one of independent claims 1 and 11, are allowable for at least the same reasons as are independent claims 1 and 11, as well as for the additional recitations contained therein.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that appellants' claims are not rendered obvious and are, therefore, patentable over the art of record, and the Examiner's rejections should be reversed.

Respectfully submitted,
COHEN, PONTANI, LIEBERMAN & PAVANE

By 

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CLAIMS APPENDIX

1. (previously presented) A telecommunication system comprising:

a first base station and a second base station, both capable of communicating by radio with a first terminal unit;

a telecommunication network capable of coupling the first base station to a second terminal unit over a first route and capable of coupling the second base station to the second terminal unit over a second route, whereby traffic data may be communicated between the first terminal unit and the second terminal unit via the first base station or the second base station, each of said first route and second route comprising at least one radio link segment and other non-radio link segments; and

a routing unit for determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include quality of at least part of the first and second routes, wherein said at least a part of the first and second routes is at least one of the other non-radio link segments.

2. (original) A telecommunication system as claimed in claim 1, wherein the routing unit is capable of initiating handover of radio communications between the first terminal unit and the base stations from one of the base stations to the other in dependence on factors that include the quality of at least part of the first and second routes.

3. (previously presented) A telecommunication system as claimed in claim 1, wherein the said factors include the quality of at least part of both the first and second routes.

4. (original) A telecommunication system as claimed in claim 3, wherein the routing unit is capable of comparing the quality of the first and second routes and making the determination that the first terminal unit is to communicate with the second terminal unit via the first or second base stations independence on that comparison.

5. (previously presented) A telecommunications system as claimed in claim 1, wherein the said factors include the quality of radio communications between the first terminal and at least one of the first and second base stations.

6. (previously presented) A telecommunications system as claimed in claim 1, comprising quality estimation apparatus for estimating the quality of at least part of the first and second routes and providing an indication of that quality to the routing unit.

7. (original) A telecommunication system as claimed in claim 6, wherein the estimation of quality is derived from a communication protocol.

8. (original) A telecommunication system as claimed in claim 7, wherein the protocol is RTCP (real-time control protocol).

9. (previously presented) A telecommunications system as claimed in claim 1, wherein at least part of the first and second routes is implemented by packet-based communications links.

10. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 1.

11. (previously presented) A method for determining routing in a telecommunication system comprising: a first base station and a second base station, both capable of communicating by radio with a first terminal unit, and a telecommunications network capable of coupling the first base station to a second terminal unit over a first route and capable of coupling the second base station to the second terminal unit over a second route, whereby traffic data may be communicated between the first terminal unit and the second terminal unit via the first base station or the second base station, each of the first and second routes comprising at least one radio link segment and other non-radio link segments; the method comprising:

estimating the quality of at least part of the first and second routes, wherein the at least a part of the first and second routes is at least one of the other non-radio link segments; and

determining whether the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on factors that include the quality.

12. (previously presented) A telecommunication system as claimed in claim 2, wherein the said factors include the quality of at least part of both the first and second routes.

13. (previously presented) A telecommunications system as claimed in claim 12, wherein the routing unit is capable of comparing the quality of the first and second routes and making the determination that the first terminal unit is to communicate with the second terminal unit via the first or second base stations in dependence on that comparison.

14. (previously presented) A telecommunications system as claimed in claim 2, wherein the said factors include the quality of radio communications between the first terminal and at least one of the first and second base stations.

15. (previously presented) A telecommunications system as claimed in claim 3, wherein the said factors include the quality of radio communications between the first terminal and at least one of the first and second base stations.

16. (previously presented) A telecommunications system as claimed in claim 4, wherein the said factors include the quality of radio communications between the first terminal and at least one of the first and second base stations.

17. (previously presented) A telecommunications system as claimed in claim 12, wherein the said factors include the quality of radio communications between the first terminal and at least one of the first and second base stations.

18. (previously presented) A telecommunications system as claimed in claim 13, wherein the said factors include the quality of radio communications between the first terminal and at least one of the first and second base stations.

19. (previously presented) A telecommunications system as claimed in claim 2, comprising quality estimation apparatus for estimating the quality of at least part of the first and second routes and providing an indication of that quality to the routing unit.

20. (previously presented) A telecommunications system as claimed in claim 3, comprising quality estimation apparatus for estimating the quality of at least part of the first and second routes and providing an indication of that quality to the routing unit.

21. (previously presented) A telecommunications system as claimed in claim 4, comprising quality estimation apparatus for estimating the quality of at least part of the first and second routes and providing an indication of that quality to the routing unit.

22. (previously presented) A telecommunications system as claimed in claim 5, comprising quality estimation apparatus for estimating the quality of at least part of the first and second routes and providing an indication of that quality to the routing unit.

23. (previously presented) A telecommunications system as claimed in claim 12, comprising quality estimation apparatus for estimating the quality of at least part of the first and second routes and providing an indication of that quality to the routing unit.

24. (previously presented) A telecommunications system as claimed in claim 13, comprising quality estimation apparatus for estimating the quality of at least part of the first and second routes and providing an indication of that quality to the routing unit.

25. (previously presented) A telecommunications system as claimed in claim 2, wherein at least part of the first and second routes is implemented by packet-based communications links.

26. (previously presented) A telecommunications system as claimed in claim 3, wherein at least part of the first and second routes is implemented by packet-based communications links.

27. (previously presented) A telecommunications system as claimed in claim 4, wherein at least part of the first and second routes is implemented by packet-based communications links.

28. (previously presented) A telecommunications system as claimed in claim 5, wherein at least part of the first and second routes is implemented by packet-based communications links.

29. (previously presented) A telecommunications system as claimed in claim 6, wherein at least part of the first and second routes is implemented by packet-based communications links.

30. (previously presented) A telecommunications system as claimed in claim 7, wherein at least part of the first and second routes is implemented by packet-based communications links.

31. (previously presented) A telecommunications system as claimed in claim 8, wherein at least part of the first and second routes is implemented by packet-based communications links.

32. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 2.

33. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 3.

34. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 4.

35. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 5.

36. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 6.

37. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 7.

38. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 8.

39. (previously presented) A cellular telephony telecommunications system employing the telecommunications system as claimed in claim 9.

40. (previously presented) The method of claim 11, wherein said step of estimating a quality comprises measuring quality based on a measured error rate in the at least part of the first and second routes.

41. (previously presented) The method of claim 11, wherein said step of estimating quality comprises determining a speed of communications in the at least part of the first and second routes.

42. (previously presented) The method of claim 11, wherein said step of estimating quality comprises measuring a consistency of a delay in the at least part of the first and second routes.

43. (previously presented) The method of claim 11, wherein said step of estimating quality comprises measuring physical characteristics of the at least part of the first and second routes.

44. (previously presented) A telecommunication system as claimed in claim 1, wherein the quality of the at least part of the first and second routes is based on a measured error rate in the at least part of the first and second routes.

45. (previously presented) A telecommunication system as claimed in claim 1, wherein the quality of the at least part of the first and second routes is based on a speed of communications in the at least part of the first and second routes.

46. (previously presented) A telecommunication system as claimed in claim 1, wherein the quality of the at least part of the first and second routes is based on a consistency of a delay in the at least part of the first and second routes.

47. (previously presented) A telecommunication system as claimed in claim 1, wherein the quality of the at least part of the first and second routes is based on measured physical characteristics of the at least part of the first and second routes.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE